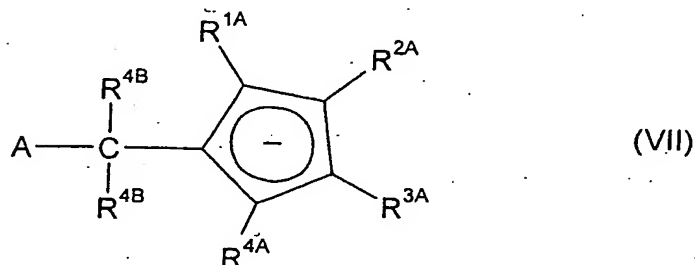


11. A process for preparing polyolefins by polymerization or copolymerization of olefins in the presence of a catalyst system as claimed in claim 8 or 9.
12. A process for preparing cyclopentadienyl system anions of the formula (VII),



where the variables have the following meanings:

R^{1A} - R^{4A} are each, independently of one another, hydrogen, C_1 - C_{20} -alkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, NR^{6A}_2 , $N(SiR^{6A}_3)_2$, OR^{6A} , $OSiR^{6A}_3$, SiR^{6A}_3 where the organic radicals R^{1A} - R^{4A} may also be substituted by halogens and two vicinal radicals R^{1A} - R^{4A} may also be joined to form a five- or six-membered ring, and/or two vicinal radicals R^{1A} - R^{4A} are joined to form a heterocycle which contains at least one atom from the group consisting of N, P, O and S,

R^{6A} are each, independently of one another, hydrogen, C_1 - C_{20} -alkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part and two geminal radicals R^{6A} may also be joined to form a five- or six-membered ring,

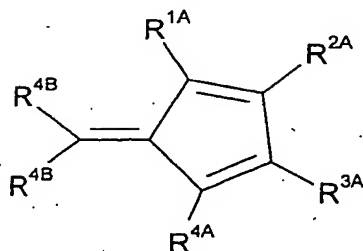
A is an unsubstituted, substituted or fused, heteroaromatic ring system,

R^{4B} are each, independently of one another, hydrogen, C_1 - C_{20} -alkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part or SiR^{3B}_3 , where the organic radicals R^{4B} may also be substituted by halogens and two geminal or vicinal radicals R^{4B} may also be joined to form a five- or six-membered ring and

R^{3B} are each, independently of one another, hydrogen, C_1 - C_{20} -alkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl or alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part and two radicals R^{3B} may also be joined to form a five- or six-membered ring,

which comprises the step a) or a'), where,

in step a), an A^- anion is reacted with a fulvene of the formula (VIIIa)



(VIIIa)

or,

in step a'), an organometallic compound $R^{4B}M^BX^B$, where

M^B is a metal of group 1 or 2 of the Periodic Table of the Elements,

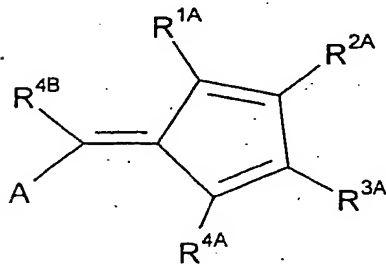
X^B is halogen, C_1 - C_{10} -alkyl, alkoxy having from 1 to 20 carbon atoms in the alkyl radical and/or from 6 to 20 carbon atoms in the aryl radical, or R^{2B} ,

R^{2B} is hydrogen, C_1 - C_{20} -alkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part or SiR^{3B}_3 , where the organic radical R^{2B} may also be substituted by halogens and R^{2B} and A may also be joined to form a five- or six-membered ring,

R^{3B} are each, independently of one another, hydrogen, C_1 - C_{20} -alkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl or alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part and two radicals R^{3B} may also be joined to form a five- or six-membered ring and

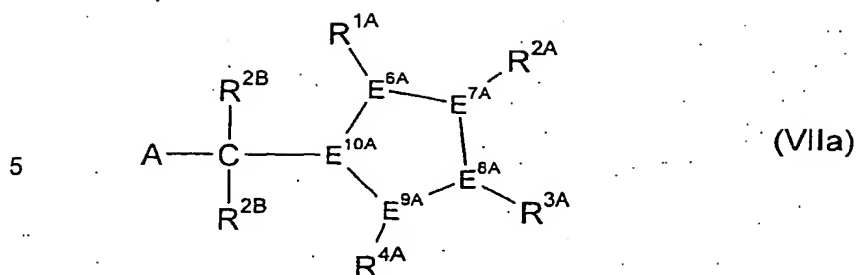
b is 0 when M^B is a metal of group 1 of the Periodic Table of the Elements and is 1 when M^B is a metal of group 2 of the Periodic Table of the Elements,

is reacted with a fulvene of the formula (VIIIb):



(VIIIb)

13. A process for preparing cyclopentadiene systems of the formula (VIIa)



where the variables have the following meanings:

10

$E^{6A}-E^{10A}$ are each carbon, where in each case four adjacent $E^{6A}-E^{10A}$ form a conjugated diene system and the remaining $E^{6A}-E^{10A}$ additionally bears a hydrogen atom,

15

$R^{1A}-R^{4A}$ are each, independently of one another, hydrogen, C_1-C_{20} -alkyl, C_2-C_{20} -alkenyl, C_6-C_{20} -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, NR^{6A}_2 , $N(SiR^{6A}_3)_2$, OR^{6A} , $OSiR^{6A}_3$, SiR^{6A}_3 , where the organic radicals $R^{1A}-R^{4A}$ may also be substituted by halogens and two vicinal radicals $R^{1A}-R^{4A}$ may also be joined to form a five- or six-membered ring, and/or two vicinal radicals $R^{1A}-R^{4A}$ are joined to form a heterocycle which contains at least one atom from the group consisting of N, P, O and S,

20

R^{6A} are each, independently of one another, hydrogen, C_1-C_{20} -alkyl, C_2-C_{20} -alkenyl, C_6-C_{20} -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part and two geminal radicals R^{6A} may also be joined to form a five- or six-membered ring,

25

A is an unsubstituted, substituted or fused, heteroaromatic ring system,

30

R^{2B} are each, independently of one another, hydrogen, C_1-C_{20} -alkyl, C_2-C_{20} -alkenyl, C_6-C_{20} -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part or SiR^{3B}_3 , where the organic radicals R^{2B} may also be substituted by halogens and R^{2B} and A may also be joined to form a five- or six-membered ring,

35

R^{3B} are each, independently of one another, hydrogen, C_1-C_{20} -alkyl, C_2-C_{20} -alkenyl, C_6-C_{20} -aryl or alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part and two radicals R^{3B} may also be joined to form a five- or six-membered ring,

40

which comprises the following step:

a'') reaction of an $A-CR^{2B}R^{2B-}$ anion with a cyclopentenone system of the formula (IX)

